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| 10/065,498 | 10/24/2002 | Haren S. Gandhi | FCHM 0106 PUS / 201-0555 | 9078 |
| 28395 | 7590 | 05/05/2004 | EXAMINER | |
| BROOKS KUSHMAN P.C./FGTL | | | ILDEBRANDO, CHRISTINA A | |
| 1000 TOWN CENTER | | | | |
| 22ND FLOOR | | | ART UNIT | PAPER NUMBER |
| SOUTHFIELD, MI 48075-1238 | | | 1725 | |

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|----------------------------------|------------------|
| Office Action Summary | Application N . | Applicant(s) |
| | 10/065,498 | GANDHI ET AL. |
| | Examiner Christina Ildebrando | Art Unit 1725 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 October 2002.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 17 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-14, 16 and 18-20 is/are rejected.
- 7) Claim(s) 15 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-16 and 18-20, drawn to a catalyst composition, classified in class 502, subclass 303.
 - II. Claim 17, drawn to an exhaust gas purification process, classified in class 423, subclass 239.1.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used as a catalyst for a materially different process of use, such as a catalyst for the catalytic conversion of hydrocarbons such as by isomerization.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II and vice versa, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Ms. Sangheeta Shah on April 7, 2004, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-16 and 18-20. Affirmation of this election must be made by applicant in replying to this Office action. Claim 17 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 4-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 4 recites the limitation "wherein the ratio of PM to Rh is between 9 and 1." This limitation renders the claim indefinite because it is not clear whether application is claiming a range of ratios of a single point. For purposes of search and examination, the claim has been examined as though a range is required. Similar indefinite limitations can be found in claim 5.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-3, 6, 16, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Evans et al.

Evans et al. (US 4,237,032) discloses a catalyst composition useful in the purification of exhaust gas from internal combustion engines. The catalyst composition comprises a substrate, a washcoat as a support on the substrate, wherein the washcoat is a perovskite such as $\text{La}_{0.8}\text{Ba}_{0.2}\text{Co}_{0.987}\text{Rh}_{0.013}\text{O}_3$, and a catalytically active coating material attached to said washcoat comprising at least one of the precious metals platinum, rhodium, ruthenium, palladium, iridium, osmium, gold, and silver (column 6, claim 6). With reference to Example 1, the reference specifically teaches the preparation of a catalyst comprising both platinum and rhodium with a Pt to Rh ratio of 11:1 and a total loading of 40 g/ft³, which yields a Pt loading of 36.7 g/ft³ (column 4, lines 1-20).

The limitations in claim 1 and 18, i.e. “optimizing storage of NOx” and “optimizing the reduction of hydrocarbon, NOx, and CO emissions under stoichiometric air/fuel ratios,” are noted by the examiner. These limitations have been regarded as statements of intended use. While intended use recitations cannot entirely be disregarded, in composition and article claims, the intended use must result in a structural difference

between the claimed invention and the prior art in order to patentably distinguish the claimed invention over the prior art. *In re Casey*, 370 USPQ 235 and *In re Otto*, 312 USPQ 458. It is the position of the examiner that the prior art structure is capable of performing the intended use and therefore meets the instant claims.

The process limitations in claims 2-3 are noted. However, when the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to applicant to establish that their product is patentably distinct and not the examiner to show the same process of making. *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

The catalyst is loaded on a ceramic honeycomb (refer to the examples) for use in a catalytic converter which is considered to meet “coated directly onto the exhaust emitting component” required by claim 20. The catalyst arrangement taught by the reference meets the arrangement required by claim 16.

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by Evans et al.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 4-5 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al. as applied above for claims 1-3, 6, 16, and 18-20.

The teachings of Evans et al. are applied as above for claims 1-3, 6, 16, and 18-20.

With respect to claims 4-5 and 7, the difference between the reference and the claims is that the reference does not disclose the ratio between PM and Rh required by claims 4-5 or the loading of PM required by claim 7. However, one of ordinary skill would recognize that the catalytic efficiency and activity of the catalyst would depend upon the amount of active metal loaded upon the washcoat. Because the amounts of these metals would be recognized by one of ordinary skill as result effective variables, one of ordinary skill would have been motivated to optimize the amounts of metals present in order to obtain the most effective catalyst. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the instantly claimed ranges through process optimization, since it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215.

Regarding claims 8-10, the reference does not disclose the exact formulae for the first catalyst as recited in the instant claims. However, the reference teaches a specific perovskite “ $\text{La}_{0.8}\text{Ba}_{0.2}\text{Co}_{0.987}\text{Rh}_{0.013}\text{O}_3$ ” and suggests that other base metals, including manganese and iron, and other precious metals, including platinum, may be used in the perovskite (column 2, lines 45-65, column 3, lines 5-20, and Example 1). It is further taught that the amount of metal used in the perovskite may be varied (column 3,

lines 20-35). Therefore, it is the position of the examiner that the reference teaches a small genus which places the claimed species within the possession of the public as in *In re Schaumann*, 572 F.2d 312, 197 USPQ 5 (CCPA1978), and as such, the claimed species would have been obvious to one having ordinary skill.

14. Claims 1-7, 11-14, 16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 941 757.

EP 0 941 757 discloses a catalyst composition useful for the purification of nitrogen oxides. The catalyst composition comprises first and second powders (page 2, lines 31). The first powder comprises a porous carrier and at least one noble metal loaded on the porous carrier (page 2, lines 31-32). The noble metal is selected from platinum, palladium, and rhodium, with combinations of palladium and rhodium being preferred (page 2, lines 54-56). The noble metal material is carried on alumina, preferably combined with an additive such as cerium, barium, and zirconia (page 3, lines 5-20). The amount of the noble metal is from 0.1-10 g/L (page 3. lines 1-8).

The second powder comprises a first double oxide having the general formula $(Ln_{1-\alpha}A_{\alpha})_{1-\beta}BO_{\delta}$ where α is a number that is greater than 0 and less than 1, β is a number that is greater than 0 and less than 1, δ is a number that is greater than 0, Ln is at least one first element selected from the group consisting of La, Ce, Nd, and Sm, A is at least one second element selected from the group consisting of Mg, Ca, Sr, Ba, Na, K, and Cs, and B is at least one third element selected from the group consisting of Fe, Co, Ni, and Mn (page 2, lines 33-41).

The difference between the reference and the claims is that the reference does not teach specifically that 1-60% of the cobalt B cation sites are substituted with a metal selected from the group consisting of platinum, rhodium, iron, copper, and manganese, as required by claim 1. However, the reference teaches that at least one third element may be selected, which suggests that more than one element may be chosen. Therefore, it is the position of the examiner that the reference teaches a small genus which places the claimed species within the possession of the public as in *In re Schaumann*, 572 F.2d 312, 197 USPQ 5 (CCPA1978), and as such, the claimed species would have been obvious to one having ordinary skill.

The limitations in claim 1 and 18, i.e. "optimizing storage of NOx" and "optimizing the reduction of hydrocarbon, NOx, and CO emissions under stoichiometric air/fuel ratios," are noted by the examiner. These limitations have been regarded as statements of intended use. While intended use recitations cannot entirely be disregarded, in composition and article claims, the intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention over the prior art. *In re Casey*, 370 USPQ 235 and *In re Otto*, 312 USPQ 458. It is the position of the examiner that the prior art structure is capable of performing the intended use and therefore meets the instant claims.

The process limitations in claims 2-3 and 13 are noted. However, when the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to applicant to establish that their product is patentably distinct and

not the examiner to show the same process of making. *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

The catalyst is loaded on a ceramic honeycomb (page 5, line 5) for use in a catalytic converter which is considered to meet "coated directly onto the exhaust emitting component" required by claim 20. The catalyst arrangement taught by the reference (page 4, line 52 – page 5, line 27) meets the arrangement required by claim 16.

With respect to claims 4-7, a further difference between the reference and the claims is that the reference does not disclose the ratio of palladium and rhodium or the specific amount of palladium alone relative to rhodium used (when a combination of metals are used). However, the reference establishes that the noble metal of the first powder is a result effective variable. Refer to page 2, line 56 – page 3, line 5. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the instantly claimed ranges through process optimization, since it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215. One would have been motivated to do so in order to obtain the best results from the catalyst.

With respect to claims 12 and 14, a further difference between the reference and the claims is that the reference does not disclose the amount of barium oxide or Ce-Zr particles contained in the support material. However, the reference establishes that the presence of these materials is a result effective variable. Refer to page 3, lines 7-16. It

would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the instantly claimed ranges through process optimization, since it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See *In re Boesch*, 205 USPQ 215. One would have been motivated to do so in order to improve the properties of heat resistance properties of the support.

Allowable Subject Matter

15. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach or suggest a catalyst system having the first and second catalyst required by the instant claims, wherein an exhaust gas sensor is placed between the first and second catalyst.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Ildebrando whose telephone number is (571) 272-1176. The examiner can normally be reached on Monday-Friday, 7:30-5, with Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Ildebrando
Christina Ildebrando
Patent Examiner
Art Unit 1725

5/3/04

CAI
May 3, 2004